RFS2 / LCFS incentives

EPA AgSTAR

June 2013

Corporate Overview

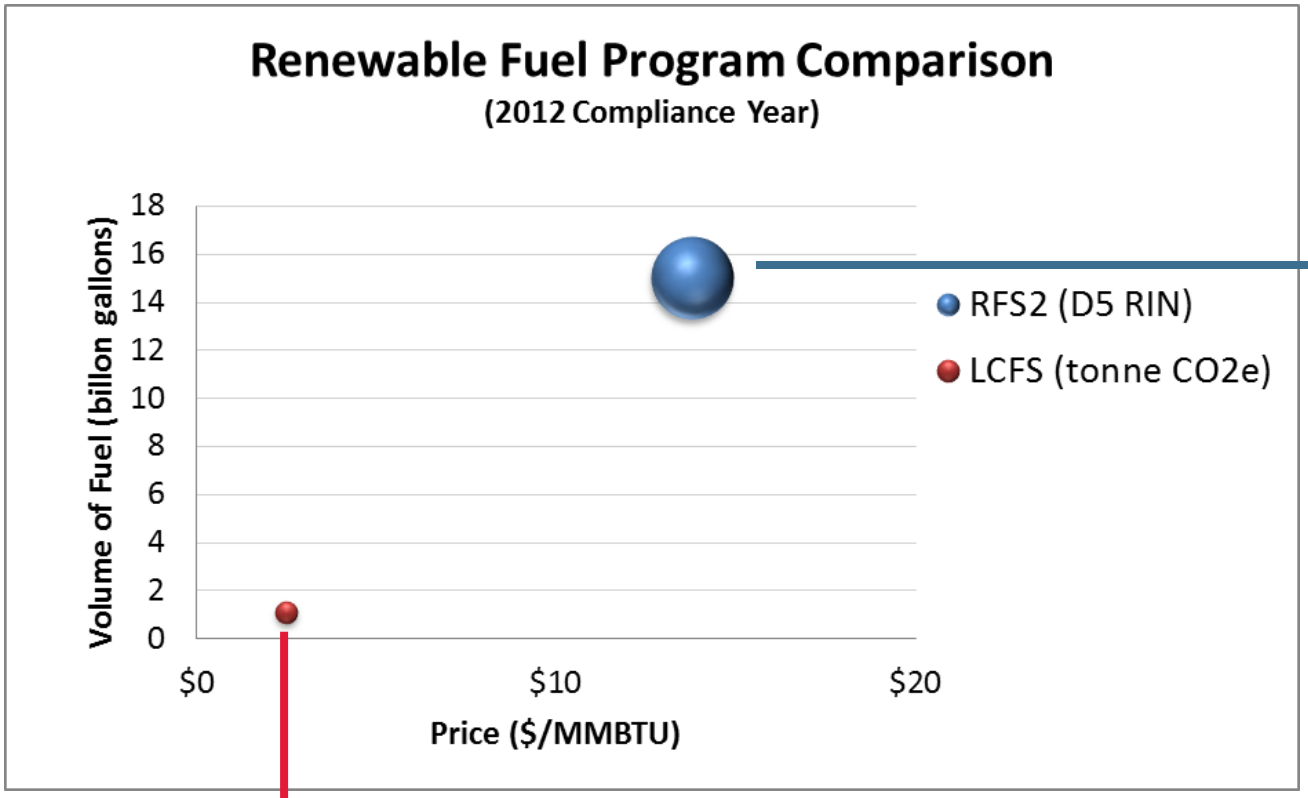
Camco International

- Camco Clean Energy (CCE) is a public company headquartered in London.
- CCE is a developer of clean energy projects and solutions to reduce greenhouse gas emissions with operations in the USA, UK, China, Africa, Russia and Southeast Asia.
- Camco has a 20-year track record in project development, consulting, and carbon credit portfolio management.
- CCE has developed and manages one of the largest carbon credit portfolios in existence. Most of the carbon is sold to EU regulated entities for compliance.
- CCE develops emissions-to-energy projects across a range of industries that include agricultural, metals, mineral processing, coal, and solid waste operations.

Camco North America

- Camco International Group, Inc. (CIG) is the North American subsidiary of CCE headquartered in Denver that began operations in 2007.
- The Carbon Business Unit has assembled a carbon portfolio in excess of 2.5 million tonnes and holds over 40% of California's agricultural offset market share.
- CIG developed and operates a 4.5 MW farm-based anaerobic digester project; the largest in N.A.
- The company is developing a pipeline of similar power and biomethane projects.
- CIG was the former owner of the 5th largest landfill gas-to-energy project in the USA.

Federal vs. Regional



EPA

California Environmental Protection Agency
Air Resources Board

$14.29/MMBTU

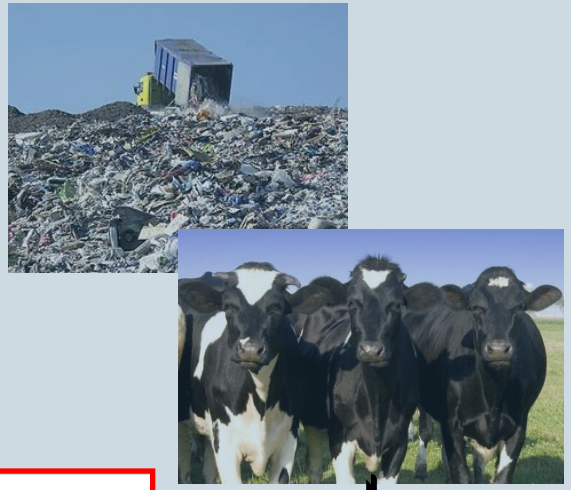
RFS2

Demand

Federal Renewable Fuel Program (RFS2)

Supply

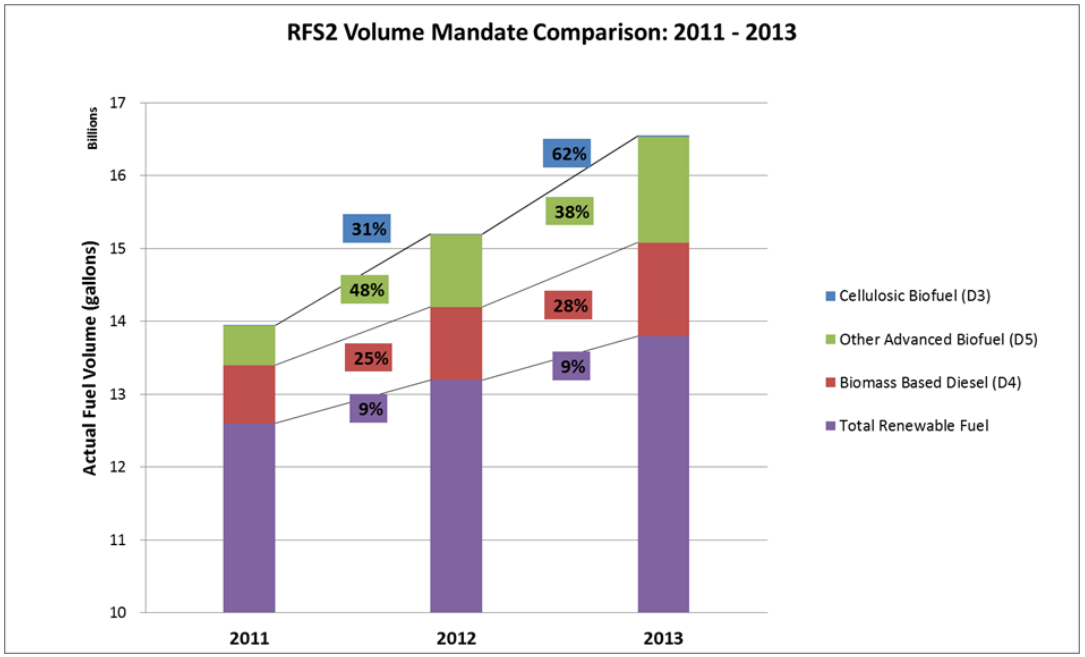
Renewable Compressed Natural Gas (rCNG)



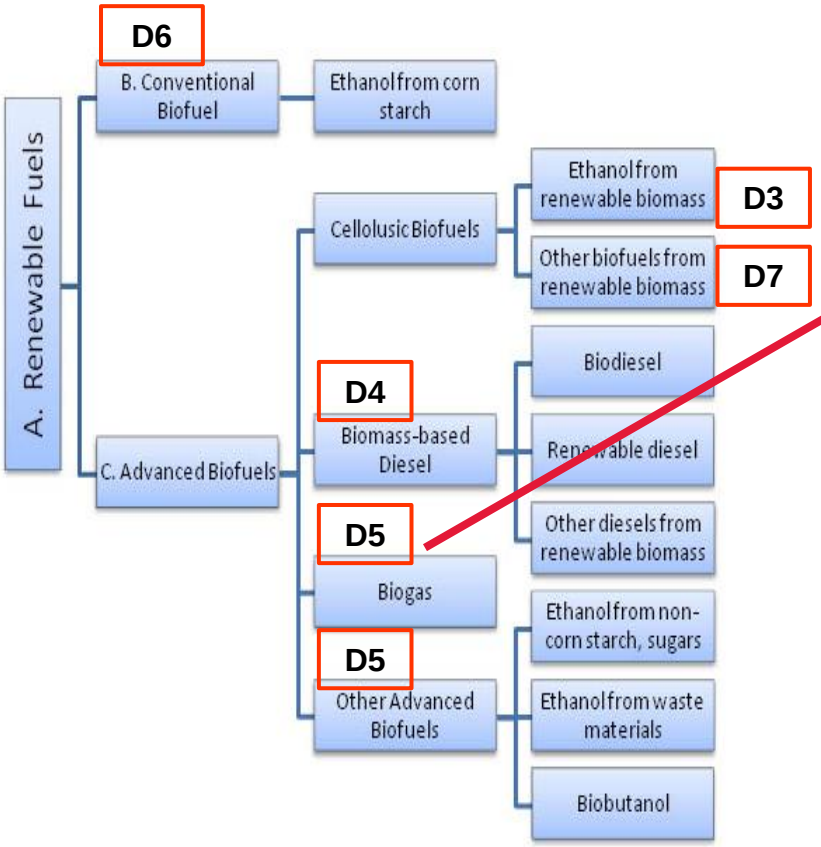
Cellulosic Biofuel (D3)
Biomas Based Diesel (D4)
Advanced Biofuel (D5)
Renewable Fuel (D6)
Cellulosic Diesel (D7)

RFS2 Program Basics

	RFS2
Boundary	Federal
Length	2022
Start	2010
Objective	36 billion gallons of renewable fuel/yr by 2022
Mechanism	Volume obligation w/ GHG intensity
Tradable security	D5 RINs (gallons)
Biogas application	Medium BTU, CNG
Historical Prices (5/10-6/3)	$0.95/RIN or $12.43 Per MMBTU



Role of Livestock CNG within RFS2

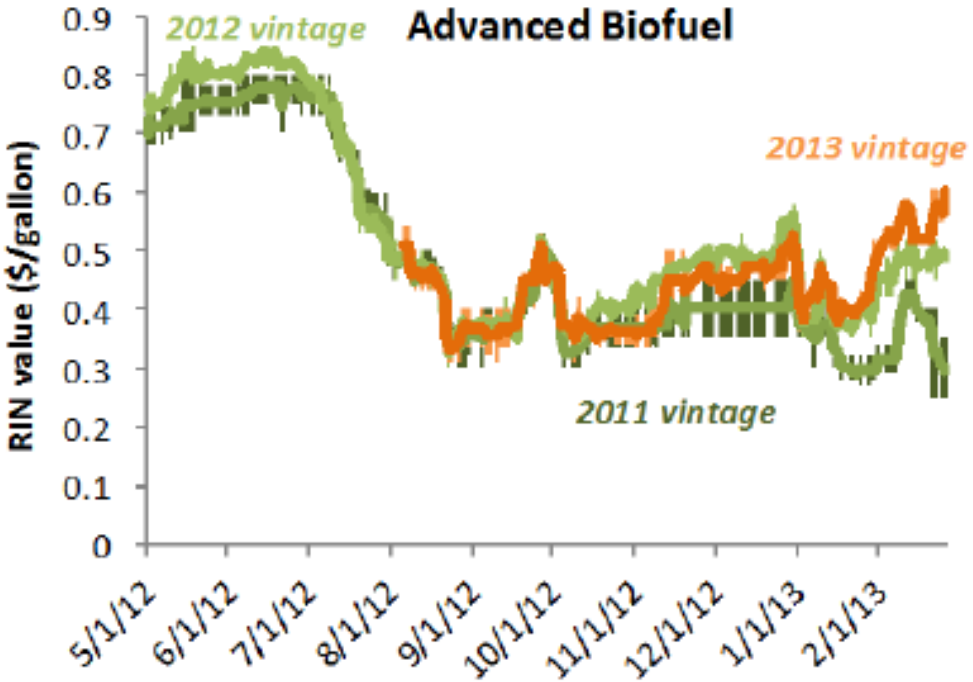


2013 D5 RIN Profile	
Brazilian Ethanol	98%
Biogas	1%
Diesel (non-D4)	1%

Registered Producers	
Manure	1
Food waste/MSW	2
Landfill	4

For each gallon of corn-starch ethanol produced (D6), one RIN is issued. For biomass diesel (D4), 1.5 RINs are issued for each gallon. In future years when commercial production of cellulosic ethanol (D3/7) becomes widely available, it will receive 2.5 RINs per gallon. For each MMBTU of biogas produced (D5), 12.97 RINs are generated.

RFS2 Market Factors



Source: OPIS

Period	D5 RIN Price	Event
Q3 2012	↑	• Market short for 2012
Q3 2012	↓	• Brazilian imports increase • Market long for 2012
Q4 2012	→	• RIN fraud fallout
Q1 2013	↑	• Imports decrease and price rebounds • $D6 = $D5 due to blend wall • Banked RINs run out at end of 2013

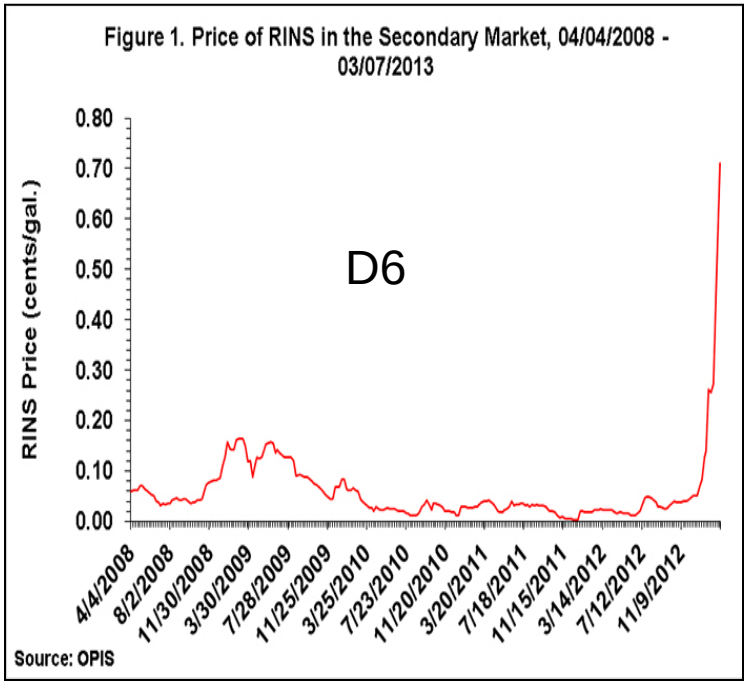
- Weak economy/efficient cars = blend wall = lower demand for ethanol = lower supply of new D6 RINs
- Cheap Brazilian ethanol / high commodity prices = lower demand for US ethanol = ethanol plant shutdowns
- High RFS2 requirements = high demand for RINS = higher prices for D6 and D5 RINs
- rCNG D5 is well positioned

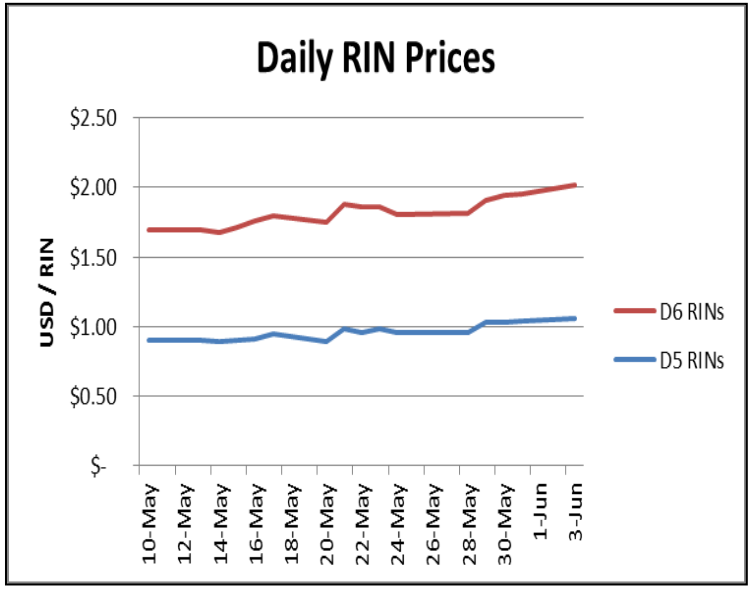
RIN Pricing and Future Demand

Table 1. U.S. Renewable (D6) RINS Stock—Billion Gallons

Calendar Year	Beginning	Mandate - Production	Exports	Ending
2013	2.6	0.9	0.5	1.2
2014	1.2	1.3	0.5	-0.6
2015	0	1.6	0.5	-2.1

Source: University of Illinois





Generating RINS from Livestock CNG (D5)

Eligibility

- Qualify for a D code:
  - Feedstock qualifies as Renewable Biomass;
  - Produce ≥ 770 MMBTU/yr; and
  - Produced for use as a transportation fuel

General Process

- Register prior to transacting RINs on EMTS
- Adhere to EPA reporting requirements
- Prescriptive “tracking” requirements in order to generate RINs

Contracting & Monitoring

- Distributed Via Dedicated OR Common Carrier Pipeline
- Producer has written contract with one exclusive buyer for specific volume and heat content.
- Common carrier pipeline connects producer to buyer.
- Gas is withdrawn from pipeline in a timely manner consistent with transport time.
- Volume and heat content of gas injected and used as process energy is continuously metered.

Recordkeeping

- Evidence of gas sale and transfer of environmental attributes from production facility to buyer.
- Documentation of gas volume and energy content delivered to distribution or injected into common carrier pipeline.
- Documentation of gas volume and energy content withdrawn from common carrier pipeline.
- Quarterly affidavits from all title holders that gas is intended for transportation fuel use.
- Gas producer’s Title V Compliance Certification

Latest RFS2 Updates

Proposed Rulemaking Related to Biogas Pathways (5/20/13)

- Digester-derived CNG and LNG eligible for RINs (no electricity).
- Revised contracting, registration, reporting & recordkeeping requirements.
- Defines WHO can generate rCNG RINS → "Producer" is defined as the company that converts biogas to CNG/LNG AND distributes the CNG/LNG for transportation fuel.
- Clarifies eligible digester feedstocks → animal waste, biogenic waste, FOG, food/yard waste, crop residue.
- Landfill-derived CNG/LNG and electricity to qualify as cellulosic (D3/D7).

Buyer Scrutiny

- RIN Voluntary Validation Program
  - 6 consultants registered
  - 3rd party verification of feedstock and plant operations

The LCFS Market

Demand

California Low Carbon Fuel Standard

Supply

Renewable Compressed Natural Gas (rCNG)

Producers receive credit for fuel that exceeds carbon intensity threshold.

LCFS Program Basics

	LCFS
Boundary	State of CA
Length	2020
Start	2010
Objective	Reduce carbon intensity (CI) of fuels 10% by 2020
Mechanism	Performance-based CI regulation
Tradable security	LCFS credit (tCO2e)
Biogas application	Medium BTU, CNG
Historical Prices	$2.00-$3.00 per MMBTU

Year	CI Reduction
2011	0.25%
2012	1.01%
2013	1.50%
2014	2.50%
2015	3.50%
2016	5.01%
2017	6.50%
2018	8.01%
2019	10.00%

LCFS Updates

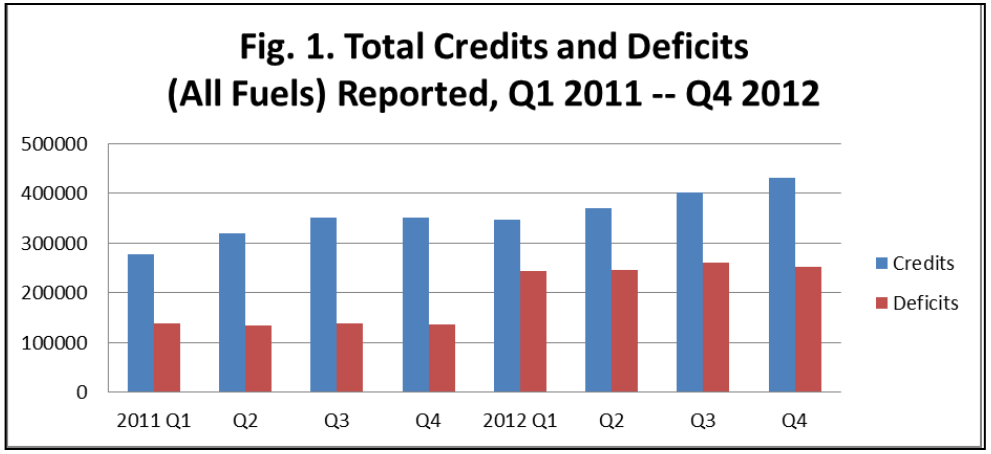
Review of program to-date

- In 2012, California daily consumed 43 million gallons of gasoline and 8 million gallons of diesel. By 2020, GHG emissions forecast from transportation will equate to 183 MMTCO2e.
- The LCFS requires oil producers, importers and other fuel providers to gradually reduce the carbon intensity of their transportation fuel mix — from 0.25 percent in 2011 to 10 percent by 2020.
- In 2012, California saw its low carbon fuels displace 3 million gallons of gasoline and 124,000 gasoline gallon equivalents of diesel per day. Overall, low carbon fuels contributed about 6 percent of the total transportation fuel mix.

Latest LCFS Updates

Proposed Rulemaking Related to Biogas Pathways (5/20/13)

- Q4 2012 Total credits and deficits show a long LCFS market.
- Prices depressed accordingly.



Source: ITS UC Davis

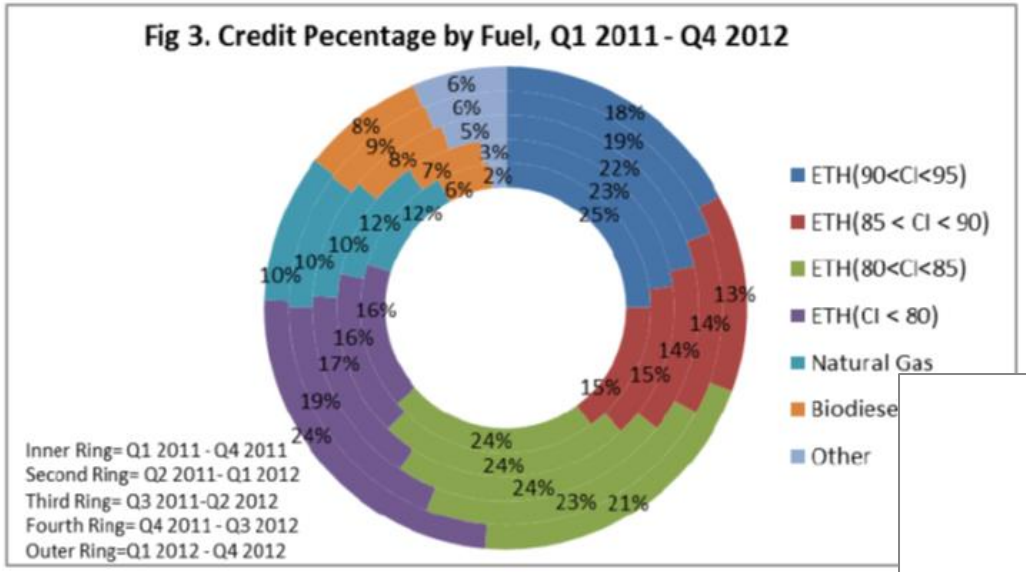
Table 1. Aggregated Credit Transactions Data

	Number of Trades	Credit Price, $ per MT	Volume Traded Per Trade, MT Credits
Q1 2011 – Q4 2011	N/A	N/A	N/A
Q1 2012 – Q4 2012	32[1]	$10– $31[1]	60 – 47,500
Q1 2013 – Present	13[2]	$25– $36[2]	300 – 20,000

Source: ITS UC Davis

Role of Livestock CNG within LCFS

LCFS has created credits largely based on ethanol. In 2012, 90 percent of the credits were generated from ethanol from corn, other grains and sugarcane; 8 percent from natural gas and bio-based gases, such as liquid and compressed natural gas; 2 percent from biodiesel and renewable diesel; and less than 1 percent from electricity.



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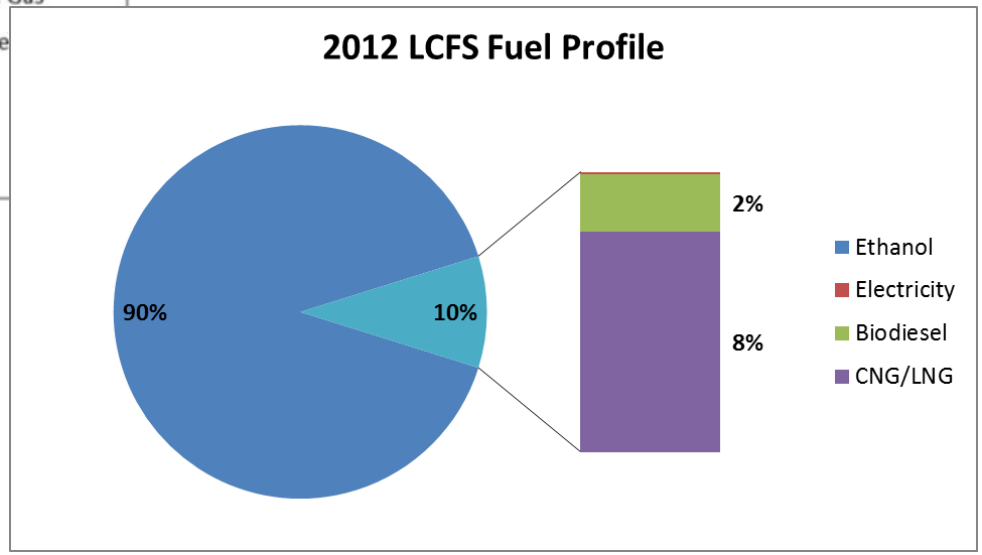

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